

AMENDMENTS TO THE SPECIFICATION

1. Please amend the first complete paragraph on page 1, from line 5 through line 10, as follows:

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**CLAIM OF PRIORITY**

A1  
This application makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. §119 from an application *METHOD FOR ENHANCING THE IMAGE QUALITY OF AN IMAGE FORMING APPARATUS* for earlier filed in the Korean Industrial Property Office on the [[6<sup>th</sup>]] 7<sup>th</sup> day of the month of July 1999, and there duly assigned Serial No. 27215/1999.

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2. Please amend the paragraph bridging page 1 and page 2, from line 18 on page 1 through line 17 on page 2, as follows:

A2  
In general, an image forming apparatus that employs an electrophotographic developing technique such as a facsimile, a printer and a complex machine, is equipped with an electrification roller, a photosensitive drum, a transfer roller, a developing roller, a toner supply roller, a fixer and a laser scanning unit (*i.e.*, a "LSU") for printing images onto a printable media such as a cut sheet of paper. I have noticed deficiencies in the pre-transfer system of image forming processes and

A2  
apparatus. By way of example, if the user intends to form an image on a printable material that is relatively thicker than the standard grade of xerographic paper such as an envelope, the toner coated on the photosensitive drum is not transferred onto the paper and the remaining toner on the photosensitive drum is transferred onto the next piece of printable material that passes along the path conveying the printable material through the apparatus, thereby causing a mis-transfer which is referred to as "ghost development", because the transfer electric field ~~can not~~ cannot transmit the thick paper. Moreover, when a thick envelope having a relatively narrower width in comparison to a sheet of A4 or 8½" by 11" paper is used in a transfer system using a conductive roller, in a state wherein a high voltage required for the transfer is applied to the transfer roller, the conductive layer of the photosensitive drum is broken. This defect is frequently referred to as a "pin hole", and occurs in the region (either on the right, the left, or possibly on both sides of the sheet of the printable media) where the transfer roller and the photosensitive drum come into direct contact with each other due to the absence of any intermediate printable media, thereby causing fatal and unrepairable damage to the photosensitive exterior circumferential surface of ~~[[drum]]~~ the drum.

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3. Please amend the paragraph bridging page 3 and page 4, from line 18 on page 3 through line 6 on page 4, as follows:

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A3  
In accordance with one aspect of the present invention, the process contemplates storing image data to be printed at a memory if a print demand is received; detecting the kind of paper

A3  
selected by a user; editing by reducing the number of pixels of the image data at a certain rate if the detected paper is a thick; and transmitting the edited image data to the LSU and performing the printing work for the edited image data. The editing step may include equally splitting the pixels of the light scanned into an integer number of pixels in order to represent one pixel of the image data, and editing by using Econo (economy) mode at which only a certain number of pixels among the equally split pixels of the light are scanned. In addition, the editing step may include splitting the print area into a plurality of small areas, and editing by using Ret (resolution enhancement technology) mode at which some pixels among the total pixels for the resolution included in the respective split small areas are removed.

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4. Please amend the first complete paragraph on page 4, from line 7 through line 11, as follows:

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A4  
In accordance with another aspect of the present invention, the process contemplates storing image data to be printed at a memory if a print demand is received; detecting the kind of paper selected by a user; transmitting the image data to the laser scanning unit if the detected paper is [[a]] thick; and decreasing the amount of the light emitted from the laser scanning unit at a predetermined rate and performing the printing work.

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5. Please amend the second complete paragraph on page 4, from line 12 through line 17, as follows:

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In accordance with ~~further~~ another aspect of the present invention, the process contemplates storing image data to be printed at a memory if a print demand is received; detecting the kind of paper selected by a user; transmitting the image data to the laser scanning unit if the detected paper is [[a]] thick; and increasing a developing voltage applied to the developing machine to a predetermined voltage level and then performing the printing work. The predetermined voltage level is equal to or less than -250 volts.

6. Please amend the paragraph bridging page 4 and page 5, from line 19 on page 4 through line 12 on page 5, as follows:

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A more complete appreciation of this invention, and many of the attendant advantages thereof, will be readily apparent as the same becomes better understood by reference to the following detailed description when considered in conjunction with the accompanying drawings in which like reference symbols indicate the same or similar components, wherein:

Fig. 1 schematically shows an image forming apparatus employing [[a]] an electrophotographic developing technique;

Fig. 2 is a schematic block diagram of an image forming apparatus ~~constructed~~ constructed

according to the principles of the present invention;

AC Fig. 3 is a flow chart showing the first embodiment of a process for enhancing the image quality of the image forming apparatus according to the principles of the present invention;

Fig. 4 is a flow chart showing the second embodiment of a process for enhancing the image quality of the image forming apparatus according to the principles of the present invention; and

Fig. 5 is a flow chart showing the third embodiment of a process for enhancing the image quality of the image forming apparatus according to the principles of the present invention.

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7. Please amend the paragraph bridging page 5 and page 6, from line 14 on page 5 through line 19 on page 6, as follows:

AT Turning now to the drawings, Fig. 1 shows an image forming apparatus 100 such as a facsimile, a printer and a complex machine, employing an electrophotographic developing technique. Image forming apparatus 100 may be constructed with a pick-up roller 101, an electrification roller 102, a photosensitive drum 103, a transfer roller 104, a developing roller 105, a supply roller 106, a fixer 107 and a laser scanning unit ("LSU") 108 for printing certain image data onto a recording medium such as a cut sheet of paper that is withdrawn by pick-up roller 101 from the top side of a stack of cut sheets stored within paper cassette 109, and propelled along a path of conveyance 120 through apparatus 100. During the printing process, the electrification roller 102 uniformly electrifies the photosensitive substance coated on the external surface of the photosensitive drum 103

77 while rotating, and the light generated from LSU 108 forms an electrostatic latent image that is to be printed, on the electrified photosensitive drum 103. Then, there is a voltage difference between the supply roller 106 to which a higher supply voltage is applied and the developing roller 105 to which a lower voltage is applied. Therefore, negative charges move from the supply roller 106 to the developing roller 105. In this way, toner supplied to the developing roller 105 is coated on the electrostatic latent image formed on the exterior circumferential surface of photosensitive drum 104 to form a visible image. The high voltage of transfer roller 104 causes the visible image formed by the toner coating the surface of the photosensitive drum 103 to be transferred to the recording paper 109 delivered along path 120. After the transfer of the visible image onto the recording paper 109 is fixed on the recording paper 109 by the high temperature and high pressure of a heating roller 110 and the pressure exerted by pressing roller 111 mounted within fixer 107 to engage opposite sides of the recording media, thereby finishing the printing process and discharging a sheet of paper bearing toner particles that form a visible image. This sequence of supplying sheets of paper, developing, transfer and application of electrification voltages is continuously applied to the supply roller 106, the developing roller 105, the transfer roller 104 and the electrification roller 102, respectively until the printing process is completed for each job. [[He]] The heating roller 110 in the fixer 107 is maintained in a turned-on state until the printing process has been completed.

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8. Please amend the paragraph bridging page 6 and page 7, from line 20 on page 6 through line 13 on page 7, as follows:

48 I have noticed deficiencies in the pre-transfer system of image forming processes and apparatus. By way of example, if the user intends to form an image on a printable material that is relatively thicker than the standard grade of xerographic paper such as an envelope, the toner coated on the photosensitive drum is not transferred onto the paper and the remaining toner on the photosensitive drum is transferred onto the next piece of printable material that passes along path 120, thereby causing a mis-transfer which is referred to as "ghost development", because the transfer electric field ~~can not~~ cannot transmit the thick paper. Moreover, when a thick envelope having a relatively narrower width in comparison to a sheet of A4 or 8½" by 11" paper is used in a transfer system using a conductive roller, in a state wherein a high voltage required for the transfer is applied to the transfer roller, the conductive layer of the photosensitive drum is broken. This defect is frequently referred to as a "pin hole", and occurs in the region (either on the right, the left, or possibly on both sides of the sheet of the printable media) where the transfer roller and the photosensitive drum come into direct contact with each other due to the absence of any intermediate printable media, thereby causing fatal and unrepairable damage to the photosensitive exterior circumferential surface of drum 103.

9. Please amend the paragraph bridging page 7 and page 8, from line 14 on page 7 through line 6 on page 8, as follows:

Referring now to Fig. 2, a preferred embodiment of the present invention may be

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implemented with an image forming apparatus 200 constructed with a central processing unit ("CPU") 201 for controlling the image forming apparatus pursuant to a given operational program as a whole. In particular, central processing unit 201 controls the function block in the image forming apparatus in accordance with the particular kind of paper selected by a user of apparatus 200, thereby enhancing the image quality. In other words, central processing unit 201 attenuates, or "faints" the image information derived from image data received from an external source such as a computer, a document scanner, or a telephone wire, and applies the image information to a laser scanning unit ("LSU") 202 faintly by either reducing the number of pixels of light emitted from the LSU 202, or by increasing the magnitude of the developing voltage when the user selects a thick paper, thereby enhancing the transfer efficiency. Power convertor 203 receives the common household line voltage, *i.e.*, either 110 volts or 220 volts, transforms the line voltage to a voltage level required at each function block in the image forming apparatus, and then supplies the transformed voltage to each function block under the control of central processing unit 201.

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10. Please amend the paragraph bridging page 8 and page 9, from line 15 on page 8 through line 9 on page 9, as follows:

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A 10  
A memory 206 stores various operational programs for controlling image forming apparatus 200 through the central processing unit 201 as well as the image data to be printed by the image forming apparatus 200. Laser scanning unit ("LSU") 202 scans signals of light corresponding to the



A 10  
image data selected by the user to be printed onto the printable medium, in order to form electrostatic latent images on the exterior circumferential surface of photosensitive drum 207. Electrification roller 208 electrifies the surface of the photosensitive drum 207 at a constant potential with a high electrification voltage (-1.4 kilo-volts) drawn from power convertor 203. The supply roller 210 supplies the particles of toner drawn from the hopper of a toner container to developing roller 205 while rotating in contact with developing roller 205. A developing roller 205 applies the toner supplied by supply roller 210 to the electrostatic latent image on the photosensitive drum 207 while contacting the photosensitive drum at a constant pressure to form a visible image on the photosensitive exterior circumferential surface of drum 207. Transfer roller 209 is electrified with a high transfer voltage (+1.5 kilovolts) drawn from power convertor 203, and transfers the toner coated onto the photosensitive exterior circumferential surface of drum 207 to the printable medium delivered paper along path 220 while rotating in contact with the photosensitive drum 207 at a constant pressure.

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11. Please amend the second complete paragraph on page 12, from line 18 through line 21, as follows:

A 11  
If the grade of paper selected at step [[S3]] S21 is determined during step S22 to not be a thicker grade of paper, central processing unit 201 performs a normal printing job during [[step]] step S26. Then, in step S27, central processing unit 201 determines whether or not the printing work

A11 is completed, and if not, repeats all the steps after step S23, or if completed, stops the process.

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12. Please amend the paragraph bridging page 13 and page 14, from line 17 on page 13 through line 7 on page 14, as follows:

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A12 The process for enhancing the image quality of the image forming apparatus in accordance with the principles of the present invention endows image formation with notable advantages. That is, in case that the image forming work is performed for a thicker stock of paper, by reducing the number of pixels of the light emitted from laser scanning unit 202 and enabling a reduction in the quantity of toner to be coated onto the photosensitive surface of drum 207, the transfer efficiency and hence the image quality are enhanced. Moreover, by decreasing the amount of the light emitted by laser scanning unit 202 and lowering the engagement force of the toner coated onto the photosensitive surface of drum 207, the transfer efficiency and hence the image quality of the resulting printed item are enhanced. In addition, by increasing the developing voltage by a certain level and reducing the quantity of toner transferred from developing roller 205 roller 205 and coated onto the photosensitive surface of drum 207, the transfer efficiency and hence the image quality are enhanced.

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